

REMARKS

Reconsideration of the present application is respectfully requested. Claims 1-65 were originally presented. Claims 50-65 have been withdrawn as being drawn to a non-elected invention. Claims 7, 18, 22, 23, and 32 have been canceled and claims 66-81 have been added, so that claims 1-6, 8-17, 19-21, 24-31, 33-49, and 66-81 are currently pending. Claims 1, 38, and 74 are in independent form.

In the Office Action dated April 7, 2006, the Examiner rejected claims 1-6, 8-12, 14-17, 19-21, 24-31, and 33-49 under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 5,366,614 to Russ et al. (hereinafter, Russ) in view of U.S. Patent No. 6,254,766 B1 to Sughrue et al. (hereinafter, Sughrue). In the rejection, the Examiner asserts that it would have been obvious to modify the process of Russ by utilizing the sorbent of Sughrue in place of the sorbent disclosed by Russ. See Office Action, p. 5, ll. 4-6. The Examiner further asserts that “[o]ne would necessarily use the regeneration and reactivation procedure that is effective for the sorbent of Sughrue.” Office Action, p. 5, ll. 7 and 8. For the reasons discussed below, Applicants submit that independent claims 1 and 38 are not obvious over the prior art, including the combination of Russ and Sughrue.

Independent claims 1 and 38 both recite a regeneration step (b), where a solid particulate system is contacted with an oxygen-containing regeneration stream in a regeneration zone under regeneration conditions. Step (a) of claims 1 and 38 clearly defines the solid particulate system as comprising *both* a sorbent and a catalyst. Therefore, step (b) of claims 1 and 38 requires the collective regeneration of both a sorbent and a catalyst in a common regeneration zone.

According to the MPEP, “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” MPEP §2143.03. For the reasons discussed below, Applicants assert that neither Russ, Sughrue, nor their combination teaches the step of regenerating a particle system comprising *both* a sorbent and a catalyst in a common regeneration zone, as recited in independent claims 1 and 38.

Sughrue discloses a “*sorbent* regeneration zone [that] employs a set of conditions such that at least a portion of the sulfurized *sorbent* is desulfurized.” Sughrue, col. 8, ll.

63-65. However, Sughrue does not disclose the regeneration of *catalyst*. Column 9, lines 25-46 of Russ discloses several *catalyst* regeneration options. However, Russ does not disclose regeneration of *sorbent*. Therefore, because Russ teaches regeneration of only *catalyst* and Sughrue teaches regeneration of only *sorbent*, Applicants submit that neither individual reference nor their combination teaches the regeneration of a particle system comprising a both catalyst and a sorbent.

The MPEP states, “It is improper to combine references where the references teach away from their combination.” MPEP §2145 (X) (D) (2). Applicants assert that no motivation exists to substitute the sorbent of Sughrue for the sorbent of the process of Russ and then collectively regenerate both the sorbent and the catalyst because, for example, Russ teaches away from the collective regeneration of a sorbent and a catalyst.

Russ teaches that its reforming catalyst particles and sulfur sorbent particles “preferably are of different size and/or density for ease of *separation for purposes of regeneration* or rejuvenation following their use in the hydrocarbon processing.” Russ, col. 6, ll. 54-57 (emphasis added). Therefore, Russ teaches that the catalyst and sorbent particles should have different physical properties so they can be easily separated prior to regeneration. In light of this disclosure, Russ clearly does not intend for, and actually teaches away from, the collective regeneration of sorbent and catalyst in a common regeneration zone, as recited in step (b) of independent claims 1 and 38.

In the Office Action, the Examiner admits that Russ “does not disclose a zinc oxide promoter metal sorbent.” Office Action, p. 4, l. 14. To cure this deficiency, the Examiner states that it would have been obvious for a skilled artisan to “have modified the process of Russ by utilizing the sorbent of Sughrue in place of the sorbent disclosed by Russ because the sorbent is effective at desulfurizing the feed streams of Russ with minimal effect on the octane of the feed stream.” Office Action, p. 5, ll. 4-8. For reasons stated below, Applicants assert that it would not be obvious to substitute the sorbent of Sughrue for the sorbent in the process of Russ because, for example, Russ teaches away from the use of a zinc oxide sulfur sorbent.

According to Russ, the “sulfur sorbent comprises a manganese component, preferably a manganese oxide. Manganese oxide has been found to provide reforming catalyst protection *superior to the zinc oxide*.” Russ, col. 10, ll. 61-64 (emphasis added).

To demonstrate the superiority of manganese oxide sorbent to zinc oxide sorbent in its process, the sulfur removal capability of “the manganese oxide sorbent ... was tested relative to the preferred zinc oxide sorbent of the prior art” by measuring the ability of each sorbent to remove sulfur from a stream that was subsequently fed to a bed of sulfur-sensitive reforming catalyst. Russ, col. 17, ll. 54-57. The performance of the sorbent was measured by comparing the relative sulfur-initiated deactivation rate of the downstream reforming catalyst measured in °C/day.

According to the results, the reforming catalyst associated with the manganese oxide sorbent experienced a “[c]atalyst deactivation [rate of 0.8°C/day, which] was significantly lower” than the “rapid loss of activity of the reforming catalyst associated with the zinc oxide” indicated by the greater than 7°C/day catalyst deactivation rate. Russ, col. 18, ll. 36-40 and Table 6. Therefore, Applicants submit that because Russ not only teaches away from the use of zinc oxide sorbent, but also demonstrates its poorer performance in the process of Russ, no motivation exists for one to substitute the zinc oxide sorbent of Sughrue for the manganese oxide sorbent of Russ.

In the Office Action, the Examiner rejects claim 13 under 35 U.S.C. §103(a) as being unpatentable over Russ in view of Sughrue as applied above, and further in view of U.S. Patent No. 6,429,170 to Dodwell et al. (hereinafter, Dodwell). Claim 13 depends from independent claim 1, which is now submitted to be in condition for allowance. Therefore, Applicants submit that the Examiner’s rejection of claim 13 under 35 U.S.C. §103(a) is now moot.

Applicants have added new claims 66-81 that further define the present invention and clearly distinguish it over the prior art of record.

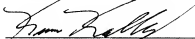
In light of the foregoing, Applicants submit that independent claims 1, 38, and 74 are now in condition for allowance. Claims 1-6, 8-17, 19-21, 24-31, 33-37, 66, 68, 70, and 72 depend from independent claim 1; claims 39-49, 67, 69, 71, and 73 depend from independent claim 38; and claims 75-81 depend from independent claim 74. These dependent claims recite additional patentable features and should also be allowable as being based on allowable independent claims.

Therefore, the present application should now be in condition for allowance and such allowance is respectfully requested. Should the Examiner have any questions, please contact the undersigned at (800) 445-3460.

A 1-month Petition for Extension of Time accompanies this Amendment. Please deduct the amount of \$120.00 for the petition fee set forth in 37 C.F.R. § 1.17(a), from our Deposit Account No. 19-0522. Please also deduct from Deposit Account 19-0522 the amount of \$750.00 for the 16 additional dependent claims, one of which is independent. The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 19-0522.

Respectfully submitted,
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